

WHAT IS CLAIMED IS

~~Sub 1~~ 1. A plasma treated thermoplastic, open-celled, porous polymeric film layer, wherein said film layer is treated with plasma to make the pore space thereof more hydrophilic, and wherein said film layer has the following properties: (a) a receding contact angle for water of less than 35°; (b) a pore volume fraction of at least 0.40, and (c) a pore accessibility for water of at least 0.60.

5 2. A monolayer film comprising the film layer of claim 1.

10 3. A multi layer film comprising a surface layer of the film layer according to claim 1.

15 4. A film layer according to claim 1, wherein the polymer of the matrix material of said layer is a polyolefin selected from the group consisting of polypropylene, polyethylene, polybutylene and copolymers and blends thereof.

11 5. A film layer according to claim 1, wherein the polymer of the matrix material of said layer is an isotactic polypropylene, containing at least about 80% by weight of isotactic polypropylene.

11 6. A film layer according to claim 1 having a receding contact angle for water of less than 10°, a pore volume fraction of at least 0.45, and a pore accessibility of at least 0.75.

11 7. A method for plasma treating a porous thermoplastic polymeric film to make the pore space thereof more hydrophilic, wherein said film has at least one surface layer comprising exposed pores, wherein said 25 method comprises the simultaneous steps of:

30 (a) passing said film between two electrodes, wherein one of said electrodes is a plasma generating electrode, which faces an outer surface of said film layer having exposed pores, and the other electrode is a plasma attracting electrode, which is positioned adjacent to the opposite side of the film;

(b) operating said plasma generating electrode under conditions sufficient to generate plasma; and

(c) operating said plasma attracting electrode under conditions sufficient to draw plasma generated in step (b) into the pore space of said porous film layer.

8. A method according to claim 7, wherein said plasma attracting electrode is in the form of a roll, which is in physical contact with the film being plasma treated.

9. A method according to claim 8, wherein said roll is a cooling roll.

10. A method according to claim 8, wherein said plasma generating electrode is operated at a higher power and frequency than said plasma attracting electrode.

11. A method according to claim 8, wherein said plasma generating electrode is operated at a frequency of from 5 MHz to 100 MHz, and said plasma attracting electrode is operated at a frequency of from 10 kHz to 500 kHz.